SEQUENCE LISTING

(1) GENERAL INFORMATION:

    (i) APPLICANTS: Horwitz, Marcus A.; Harth, Günter; and Lee, Bai-Yu

    (ii) TITLE OF INVENTION: Abundant Extracellular Products and Methods for Their Production and Use

    (iii) NUMBER OF SEQUENCES: 159

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    (v) COMPUTER READABLE FORM:
        (A) MEDIUM TYPE: Floppy disk
        (B) COMPUTER: IBM PC compatible
        (C) OPERATING SYSTEM: PC-DOS/MS-DOS
        (D) SOFTWARE: PatentIn Release #1.0,
           Version #1.30

    (vi) CURRENT APPLICATION DATA:
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    (vii) PRIOR APPLICATION DATA:
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    (vii) PRIOR APPLICATION DATA:
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    (vii) PRIOR APPLICATION DATA:
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(2) INFORMATION FOR SEQ ID NO:1:

    (i) SEQUENCE CHARACTERISTICS:
10   (A) LENGTH: 5 amino acids
      (B) TYPE: amino acid
      (C) STRANDEDNESS:
      (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: protein

15   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: N-terminal

    (vi) ORIGINAL SOURCE:
      (A) ORGANISM: *Mycobacterium tuberculosis*
20   (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

    Asn Ser Lys Ser Val
    1   5

(2) INFORMATION FOR SEQ ID NO:2:

25   (i) SEQUENCE CHARACTERISTICS:
      (A) LENGTH: 5 amino acids
      (B) TYPE: amino acid
      (C) STRANDEDNESS:
      (D) TOPOLOGY: linear

30   (ii) MOLECULE TYPE: protein

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: N-terminal

```
          (vi)  ORIGINAL SOURCE:
                (A)  ORGANISM: Mycobacterium tuberculosis
                (B)  STRAIN: Erdman

          (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:2:

5          Thr Asp Arg Val Ser
           1                 5


     (2)  INFORMATION FOR SEQ ID NO:3:

          (i)   SEQUENCE CHARACTERISTICS:
                (A)  LENGTH: 5 amino acids
10              (B)  TYPE: amino acid
                (C)  STRANDEDNESS:
                (D)  TOPOLOGY: linear

          (ii)  MOLECULE TYPE: protein

         (iii)  HYPOTHETICAL: NO

15        (iv)  ANTI-SENSE: NO

          (v)   FRAGMENT TYPE: N-terminal

          (vi)  ORIGINAL SOURCE:
                (A)  ORGANISM: Mycobacterium tuberculosis
                (B)  STRAIN: Erdman

20        (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:3:

           Ala Arg Ala Val Gly
           1                 5


     (2)  INFORMATION FOR SEQ ID NO:4:

          (i)   SEQUENCE CHARACTERISTICS:
25              (A)  LENGTH: 5 amino acids
                (B)  TYPE: amino acid
                (C)  STRANDEDNESS:
                (D)  TOPOLOGY: linear

          (ii)  MOLECULE TYPE: protein

30       (iii)  HYPOTHETICAL: NO

          (iv)  ANTI-SENSE: NO

          (v)   FRAGMENT TYPE: N-terminal
```

            (vi) ORIGINAL SOURCE:
                 (A) ORGANISM: *Mycobacterium tuberculosis*
                 (B) STRAIN: Erdman

            (xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

5   Thr Glu Lys Thr Pro
             1   5

    (2) INFORMATION FOR SEQ ID NO:5:

            (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 5 amino acids
10   (B) TYPE: amino acid
                (C) STRANDEDNESS:
                (D) TOPOLOGY: linear

            (ii) MOLECULE TYPE: protein

           (iii) HYPOTHETICAL: NO

15   (iv) ANTI-SENSE: NO

            (v) FRAGMENT TYPE: N-terminal

            (vi) ORIGINAL SOURCE:
                 (A) ORGANISM: *Mycobacterium tuberculosis*
                 (B) STRAIN: Erdman

20   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

             Asp Pro Glu Pro Ala
             1   5

    (2) INFORMATION FOR SEQ ID NO:6:

            (i) SEQUENCE CHARACTERISTICS:
25   (A) LENGTH: 5 amino acids
                (B) TYPE: amino acid
                (C) STRANDEDNESS:
                (D) TOPOLOGY: linear

            (ii) MOLECULE TYPE: protein

30   (iii) HYPOTHETICAL: NO

            (iv) ANTI-SENSE: NO

            (v) FRAGMENT TYPE: N-terminal

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: *Mycobacterium tuberculosis*
    (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Phe Ser Arg Pro Gly
1   5

(2) INFORMATION FOR SEQ ID NO:7:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 5 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: protein

 (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: NO

   (v) FRAGMENT TYPE: N-terminal

  (vi) ORIGINAL SOURCE:
    (A) ORGANISM: *Mycobacterium tuberculosis*
    (B) STRAIN: Erdman

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

Phe Ser Arg Pro Gly
1   5

(2) INFORMATION FOR SEQ ID NO:8:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 5 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: protein

 (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: NO

   (v) FRAGMENT TYPE: N-terminal

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: *Mycobacterium tuberculosis*
    (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

Phe Ser Arg Pro Gly
1   5

(2) INFORMATION FOR SEQ ID NO:9:

   (i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 5 amino acids
    (B) TYPE: amino acid
    (C) STRANDEDNESS:
    (D) TOPOLOGY: linear

  (ii) MOLECULE TYPE: protein

 (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: NO

   (v) FRAGMENT TYPE: N-terminal

  (vi) ORIGINAL SOURCE:
    (A) ORGANISM: *Mycobacterium tuberculosis*
    (B) STRAIN: Erdman

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

Ala Pro Tyr Glu Asn
1   5

(2) INFORMATION FOR SEQ ID NO:10:

   (i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 5 amino acids
    (B) TYPE: amino acid
    (C) STRANDEDNESS:
    (D) TOPOLOGY: linear

  (ii) MOLECULE TYPE: protein

 (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: NO

   (v) FRAGMENT TYPE: N-terminal

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: *Mycobacterium tuberculosis*
             (B) STRAIN: Erdman

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

5   Ala Pro Lys Thr Tyr
         1   5

     (2) INFORMATION FOR SEQ ID NO:11:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 5 amino acids
10   (B) TYPE: amino acid
            (C) STRANDEDNESS:
            (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: protein

        (iii) HYPOTHETICAL: NO

15   (iv) ANTI-SENSE: NO

        (v) FRAGMENT TYPE: N-terminal

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: *Mycobacterium tuberculosis*
             (B) STRAIN: Erdman

20   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

         Ala Glu Thr Tyr Leu
         1   5

     (2) INFORMATION FOR SEQ ID NO:12:

        (i) SEQUENCE CHARACTERISTICS:
25   (A) LENGTH: 5 amino acids
            (B) TYPE: amino acid
            (C) STRANDEDNESS:
            (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: protein

30   (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: NO

        (v) FRAGMENT TYPE: N-terminal

```
          (vi)  ORIGINAL SOURCE:
                (A)  ORGANISM: Mycobacterium tuberculosis
                (B)  STRAIN: Erdman

          (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:12:

 5         Ala Tyr Pro Ile Thr
           1               5


    (2)  INFORMATION FOR SEQ ID NO:13:

          (i)  SEQUENCE CHARACTERISTICS:
               (A)  LENGTH: 5 amino acids
10             (B)  TYPE: amino acid
               (C)  STRANDEDNESS:
               (D)  TOPOLOGY: linear

         (ii)  MOLECULE TYPE: protein

        (iii)  HYPOTHETICAL: NO

15       (iv)  ANTI-SENSE: NO

          (v)  FRAGMENT TYPE: N-terminal

         (vi)  ORIGINAL SOURCE:
               (A)  ORGANISM: Mycobacterium tuberculosis
               (B)  STRAIN: Erdman

20       (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:13:

           Ala Asp Pro Arg Leu
           1               5


    (2)  INFORMATION FOR SEQ ID NO:14:

          (i)  SEQUENCE CHARACTERISTICS:
25             (A)  LENGTH: 5 amino acids
               (B)  TYPE: amino acid
               (C)  STRANDEDNESS:
               (D)  TOPOLOGY: linear

         (ii)  MOLECULE TYPE: protein

30      (iii)  HYPOTHETICAL: NO

         (iv)  ANTI-SENSE: NO

          (v)  FRAGMENT TYPE: N-terminal
```

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: *Mycobacterium tuberculosis*
    (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

```
Phe Asp Thr Arg Leu
1               5
```

(2) INFORMATION FOR SEQ ID NO:15:

  (i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 40 amino acids
    (B) TYPE: amino acid
    (C) STRANDEDNESS:
    (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: N-terminal

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: *Mycobacterium tuberculosis*
    (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

```
Phe Ser Arg Pro Gly Leu Pro Val Glu Tyr Leu Gln Val Pro Ser
1               5                   10                  15

Pro Ser Met Gly Arg Asp Ile Lys Val Gln Phe Gln Ser Gly Gly
16              20                  25                  30

Asn Asn Ser Pro Ala Val Tyr Leu Leu Asp
31              35                  40
```

(2) INFORMATION FOR SEQ ID NO:16:

  (i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 40 amino acids
    (B) TYPE: amino acid
    (C) STRANDEDNESS:
    (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

 (v) FRAGMENT TYPE: N-terminal

(vi) ORIGINAL SOURCE:
     (A) ORGANISM: *Mycobacterium tuberculosis*
     (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

```
Phe Ser Arg Pro Gly Leu Pro Val Glu Tyr Leu Gln Val Pro Ser
1               5                   10                  15

Pro Ser Met Gly Arg Asp Ile Lys Val Gln Phe Gln Ser Gly Gly
16              20                  25                  30

Asn Asn Ser Pro Ala Val Tyr Leu Leu Asp
31              35                  40
```

(2) INFORMATION FOR SEQ ID NO:17:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 22 amino acids
            (B) TYPE: amino acid
            (C) STRANDEDNESS:
            (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: protein

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: NO

      (v) FRAGMENT TYPE: N-terminal

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: *Mycobacterium tuberculosis*
          (B) STRAIN: Erdman

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

```
Phe Ser Arg Pro Gly Leu Pro Val Glu Tyr Leu Gln Val Pro Ser
1               5                   10                  15

Ala Ser Met Gly Arg Asp Ile
16              20
```

(2) INFORMATION FOR SEQ ID NO:18:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 48 amino acids
            (B) TYPE: amino acid

```
              (C)  STRANDEDNESS:
              (D)  TOPOLOGY: linear

         (ii)  MOLECULE TYPE: protein

        (iii)  HYPOTHETICAL: NO

5        (iv)  ANTI-SENSE: NO

          (v)  FRAGMENT TYPE: N-terminal

         (vi)  ORIGINAL SOURCE:
              (A)  ORGANISM: Mycobacterium tuberculosis
              (B)  STRAIN: Erdman

10       (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:18:

    Phe Asp Thr Arg Leu Met Arg Leu Glu Asp Glu Met Lys Glu Gly
    1               5               10                      15

    Arg Tyr Glu Val Arg Ala Glu Leu Pro Gly Val Asp Pro Asp Lys
    16              20              25                      30

15  Asp Val Asp Ile Met Val Arg Asp Gly Gln Leu Thr Ile Lys Ala
    31              35              40                      45

    Glu Arg Thr
    46


    (2)  INFORMATION FOR SEQ ID NO:19:

20       (i)  SEQUENCE CHARACTERISTICS:
              (A)  LENGTH: 30 amino acids
              (B)  TYPE: amino acid
              (C)  STRANDEDNESS:
              (D)  TOPOLOGY: linear

25       (ii)  MOLECULE TYPE: protein

        (iii)  HYPOTHETICAL: NO

         (iv)  ANTI-SENSE: NO

          (v)  FRAGMENT TYPE: N-terminal

         (vi)  ORIGINAL SOURCE:
30            (A)  ORGANISM: Mycobacterium tuberculosis
              (B)  STRAIN: Erdman
```

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

```
Ala Asp Pro Arg Leu Gln Phe Thr Ala Thr Thr Leu Ser Gly Ala
1               5                   10                  15

Pro Phe Asp Lys Ala Ser Leu Gln Gly Lys Pro Ala Val Leu Trp
21              20                  25                  30
```

(2) INFORMATION FOR SEQ ID NO:20:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 30 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: protein

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: N-terminal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

```
Ala Asp Pro Arg Leu Gln Phe Thr Ala Thr Thr Leu Ser Gly Ala
1               5                   10                  15

Pro Phe Asp Lys Ala Ser Leu Gln Gly Lys Pro Ala Val Leu Trp
16              20                  25                  30
```

(2) INFORMATION FOR SEQ ID NO:21:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 47 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: protein

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: N-terminal

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: *Mycobacterium tuberculosis*
    (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

```
Ala Tyr Pro Ile Thr Gly Cys Leu Gly Ser Glu Leu Thr Met Thr
1               5                   10                  15

Asp Thr Val Gly Gln Val Val Leu Gly Trp Lys Val Ser Asp Leu
16              20                  25                  30

Phe Lys Ser Thr Ala Val Ile Pro Gly Tyr Thr Val Xaa Glu Gln
31              35                  40                  45

Gln Ile
46
```

(2) INFORMATION FOR SEQ ID NO:22:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 47 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: protein

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: N-terminal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

```
Ala Tyr Pro Ile Thr Asx Lys Leu Gly Ser Glu Leu Thr Met Thr
1               5                   10                  15

Asp Thr Val Gly Gln Val Val Leu Gly Trp Lys Val Ser Asp Leu
16              20                  25                  30

Tyr Lys Ser Thr Ala Val Ile Pro Gly Tyr Thr Val Xaa Glu Gln
31              35                  40                  45

Gln Ile
46
```

(2) INFORMATION FOR SEQ ID NO:23:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 22 amino acids
        (B) TYPE: amino acid
5   (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: protein

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

10   (v) FRAGMENT TYPE: N-terminal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

15 Ala Glu Thr Tyr Leu Pro Asp Leu Asp Trp Asp Tyr Gly Ala Leu
   1   5   10   15

Glu Pro His Ile Ser Gly Gln
16   20

(2) INFORMATION FOR SEQ ID NO:24:

20   (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 13 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

25   (ii) MOLECULE TYPE: protein

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: N-terminal

    (vi) ORIGINAL SOURCE:
30   (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

Ala Pro Lys Thr Tyr Xaa Glu Glu Leu Lys Gly Thr Asp
1   5   10

(2) INFORMATION FOR SEQ ID NO:25:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 60 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: protein

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: N-terminal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

```
Ala Pro Tyr Glu Asn Leu Met Asx Pro Ser Pro Ser Met Gly Arg
1               5               10              15

Asp Ile Pro Val Ala Phe Leu Ala Gly Gly Pro His Ala Val Tyr
16              20              25              30

Leu Leu Asp Ala Phe Asn Ala Gly Pro Asp Val Ser Asn Trp Val
31              35              40              45

Thr Ala Gly Asn Ala Met Met Thr Leu Ala Xaa Lys Gly Ile Cys
46              50              55              60
```

(2) INFORMATION FOR SEQ ID NO:26:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 60 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: protein

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: N-terminal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

```
Ala Pro Tyr Glu Asn Leu Met Val Pro Ser Pro Ser Met Gly Arg
1               5               10              15

Asp Ile Pro Val Ala Phe Leu Ala Gly Gly Pro His Ala Val Tyr
16              20              25              30

Leu Leu Asp Ala Phe Asn Ala Gly Pro Asp Val Ser Asn Trp Val
31              35              40              45

Thr Ala Gly Asn Ala Met Met Thr Leu Ala Xaa Lys Gly Ile Ser
46              50              55              60
```

(2) INFORMATION FOR SEQ ID NO:27:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 40 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: protein

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: N-terminal

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

```
Phe Ser Arg Pro Gly Leu Pro Val Glu Tyr Leu Gln Val Pro Ser
1               5               10              15

Pro Ser Met Gly Arg Asp Ile Lys Val Gln Phe Gln Ser Gly Gly
16              20              25              30

Asn Asn Ser Pro Ala Val Tyr Leu Leu Asp
31              35              40
```

(2) INFORMATION FOR SEQ ID NO:28:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 40 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: N-terminal

5   (vi) ORIGINAL SOURCE:
          (A) ORGANISM: *Mycobacterium tuberculosis*
          (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

```
Phe Ser Arg Pro Gly Leu Pro Val Glu Tyr Leu Gln Val Pro Ser
1               5                   10                  15

Pro Ser Met Gly Arg Asp Ile Lys Val Gln Phe Gln Ser Gly Gly
16              20                  25                  30

Asn Asn Ser Pro Xaa Leu Tyr Leu Leu Asp
31              35                  40
```

15 (2) INFORMATION FOR SEQ ID NO:29:

          (i) SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 22 amino acids
              (B) TYPE: amino acid
              (C) STRANDEDNESS:
20   (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: N-terminal

25   (vi) ORIGINAL SOURCE:
          (A) ORGANISM: *Mycobacterium tuberculosis*
          (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

```
Phe Ser Arg Pro Gly Leu Pro Val Glu Tyr Leu Gln Val Pro Ser
1               5                   10                  15

Ala Xaa Met Gly Arg Asp Ile
16              20
```

(2) INFORMATION FOR SEQ ID NO:30:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 30 amino acids
        (B) TYPE: amino acid
5   (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: protein

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

10   (v) FRAGMENT TYPE: N-terminal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

15 Asp Pro Glu Pro Ala Pro Pro Val Pro Asp Asp Ala Ala Ser Pro
   1   5   10   15

Pro Asp Asp Ala Ala Ala Pro Pro Ala Pro Ala Asp Pro Pro Xaa
16   20   25   30

(2) INFORMATION FOR SEQ ID NO:31:

20   (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 20 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

25   (ii) MOLECULE TYPE: protein

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: N-terminal

    (vi) ORIGINAL SOURCE:
30   (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

Thr Glu Lys Thr Pro Asp Asp Val Phe Lys Leu Ala Lys Asp Glu
1   5   10   15

Lys Val Leu Tyr Leu
16   20

(2) INFORMATION FOR SEQ ID NO:32:

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 6 amino acids
       (B) TYPE: amino acid
       (C) STRANDEDNESS:
       (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: protein

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: N-terminal

    (vi) ORIGINAL SOURCE:
       (A) ORGANISM: *Mycobacterium tuberculosis*
       (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

Ala Arg Ala Val Gly Ile
1   5

(2) INFORMATION FOR SEQ ID NO:33:

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 8 amino acids
       (B) TYPE: amino acid
       (C) STRANDEDNESS:
       (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: protein

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: N-terminal

    (vi) ORIGINAL SOURCE:
       (A) ORGANISM: *Mycobacterium tuberculosis*
       (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

```
Thr Asp Arg Val Ser Val Gly Asn
1               5
```

(2) INFORMATION FOR SEQ ID NO:34:

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 22 amino acids
          (B) TYPE: amino acid
          (C) STRANDEDNESS:
          (D) TOPOLOGY: linear

      (ii) MOLECULE TYPE: protein

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: NO

      (v) FRAGMENT TYPE: N-terminal

      (vi) ORIGINAL SOURCE:
          (A) ORGANISM: *Mycobacterium tuberculosis*
          (B) STRAIN: Erdman

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

```
Asn Ser Lys Ser Val Asn Ser Phe Gly Ala His Asp Thr Leu Lys
1               5                   10                  15
Val Xaa Glu Arg Lys Arg Gln
16              20
```

(2) INFORMATION FOR SEQ ID NO:35:

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 978 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: not relevant

      (ii) MOLECULE TYPE: DNA (genomic)

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

```
ATGACAGACG TGAGCCGAAA GATTCGAGCT TGGGGACGCC GATTGATGAT      50
CGGCACGGCA GCGGCTGTAG TCCTTCCGGG CCTGGTGGGG CTTGCCGGCG     100
GAGCGGCAAC CGCGGGCGCG TTCTCCCGGC CGGGGCTGCC GGTCGAGTAC     150
CTGCAGGTGC CGTCGCCGTC GATGGGCCGC GACATCAAGG TTCAGTTCCA     200
```

```
   GAGCGGTGGG AACAACTCAC CTGCGGTTTA TCTGCTCGAC GGCCTGCGCG   250

   CCCAAGACGA CTACAACGGC TGGGATATCA ACACCCCGGC GTTCGAGTGG   300

   TACTACCAGT CGGGACTGTC GATAGTCATG CCGGTCGGCG GGCAGTCCAG   350

   CTTCTACAGC GACTGGTACA GCCCGGCCTG CGGTAAGGCT GGCTGCCAGA   400

 5 CTTACAAGTG GGAAACCTTC CTGACCAGCG AGCTGCCGCA ATGGTTGTCC   450

   GCCAACAGGG CCGTGAAGCC CACCGGCAGC GCTGCAATCG GCTTGTCGAT   500

   GGCCGGCTCG TCGGCAATGA TCTTGGCCGC CTACCACCCC CAGCAGTTCA   550

   TCTACGCCGG CTCGCTGTCG GCCCTGCTGG ACCCCTCTCA GGGGATGGGG   600

   CCTAGCCTGA TCGGCCTCGC GATGGGTGAC GCCGGCGGTT ACAAGGCCGC   650

10 AGACATGTGG GGTCCCTCGA GTGACCCGGC ATGGGAGCGC AACGACCCTA   700

   CGCAGCAGAT CCCCAAGCTG GTCGCAAACA ACACCCGGCT ATGGGTTTAT   750

   TGCGGGAACG GCACCCCGAA CGAGTTGGGC GGTGCCAACA TACCCGCCGA   800

   GTTCTTGGAG AACTTCGTTC GTAGCAGCAA CCTGAAGTTC CAGGATGCGT   850

   ACAACGCCGC GGGCGGGCAC AACGCCGTGT TCAACTTCCC GCCCAACGGC   900

15 ACGCACAGCT GGGAGTACTG GGGCGCTCAG CTCAACGCCA TGAAGGGTGA   950

   CCTGCAGAGT TCGTTAGGCG CCGGCTGA    978
```

(2) INFORMATION FOR SEQ ID NO:36:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1017 base pairs
20   (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: not relevant

    (ii) MOLECULE TYPE: DNA (genomic)

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

```
25 ATGCAGCTTG TTGACAGGGT TCGTGGCGCC GTCACGGGTA TGTCGCGTCG    50

   ACTCGTGGTC GGGGCCGTCG GCGCGGCCCT AGTGTCGGGT CTGGTCGGCG   100

   CCGTCGGTGG CACGGCGACC GCGGGGGCAT TTTCCCGGCC GGGCTTGCCG   150

   GTGGAGTACC TGCAGGTGCC GTCGCCGTCG ATGGGCCGTG ACATCAAGGT   200

   CCAATTCCAA AGTGGTGGTG CCAACTCGCC CGCCCTGTAC CTGCTCGACG   250
```

```
     GCCTGCGCGC GCAGGACGAC TTCAGCGGCT GGGACATCAA CACCCCGGCG  300

     TTCGAGTGGT ACGACCAGTC GGGCCTGTCG GTGGTCATGC CGGTGGGTGG  350

     CCAGTCAAGC TTCTACTCCG ACTGGTACCA GCCCGCCTGC GGCAAGGCCG  400

     GTTGCCAGAC TTACAAGTGG GAGACCTTCC TGACCAGCGA GCTGCCGGGG  450

  5  TGGCTGCAGG CCAACAGGCA CGTCAAGCCC ACCGGAAGCG CCGTCGTCGG  500

     TCTTTCGATG GCTGCTTCTT CGGCGCTGAC GCTGGCGATC TATCACCCCC  550

     AGCAGTTCGT CTACGCGGGA GCGATGTCGG GCCTGTTGGA CCCCTCCCAG  600

     GCGATGGGTC CCACCCTGAT CGGCCTGGCG ATGGGTGACG CTGGCGGCTA  650

     CAAGGCCTCC GACATGTGGG GCCCGAAGGA GGACCCGGCG TGGCAGCGCA  700

 10  ACGACCCGCT GTTGAACGTC GGGAAGCTGA TCGCCAACAA CACCCGCGTC  750

     TGGGTGTACT GCGGCAACGG CAAGCCGTCG GATCTGGGTG GCAACAACCT  800

     GCCGGCCAAG TTCCTCGAGG GCTTCGTGCG GACCAGCAAC ATCAAGTTCC  850

     AAGACGCCTA CAACGCCGGT GGCGGCCACA ACGGCGTGTT CGACTTCCCG  900

     GACAGCGGTA CGCACAGCTG GGAGTACTGG GGCGCGCAGC TCAACGCTAT  950

 15  GAAGCCCGAC CTGCAACGGG CACTGGGTGC CACGCCCAAC ACCGGGCCCG  1000

     CGCCCCAGGG CGCCTAG     1017
```

        (2) INFORMATION FOR SEQ ID NO:37:

            (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 15 amino acids
 20   (B) TYPE: amino acid
                (C) STRANDEDNESS:
                (D) TOPOLOGY: linear

            (ii) MOLECULE TYPE: peptide

            (iii) HYPOTHETICAL: NO

 25   (iv) ANTI-SENSE: NO

            (v) FRAGMENT TYPE: N-terminal

            (vi) ORIGINAL SOURCE:
                (A) ORGANISM: *Mycobacterium tuberculosis*
                (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

Phe Ser Arg Pro Gly Leu Pro Val Glu Tyr Leu Gln Val Pro Ser
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:38:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 15 amino acids
            (B) TYPE: amino acid
            (C) STRANDEDNESS:
            (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: peptide

       (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: NO

         (v) FRAGMENT TYPE: internal

        (vi) ORIGINAL SOURCE:
            (A) ORGANISM: *Mycobacterium tuberculosis*
            (B) STRAIN: Erdman

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

Leu Pro Val Glu Tyr Leu Gln Val Pro Ser Pro Ser Met Gly Arg
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:39:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 15 amino acids
            (B) TYPE: amino acid
            (C) STRANDEDNESS:
            (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: peptide

       (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: NO

         (v) FRAGMENT TYPE: internal

        (vi) ORIGINAL SOURCE:
            (A) ORGANISM: *Mycobacterium tuberculosis*
            (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

```
Leu Gln Val Pro Ser Pro Ser Met Gly Arg Asp Ile Lys Val Gln
1               5                   10                  15
```

(2) INFORMATION FOR SEQ ID NO:40:

      (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 15 amino acids
         (B) TYPE: amino acid
         (C) STRANDEDNESS:
         (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: NO

      (v) FRAGMENT TYPE: internal

     (vi) ORIGINAL SOURCE:
         (A) ORGANISM: *Mycobacterium tuberculosis*
         (B) STRAIN: Erdman

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

```
Pro Ser Met Gly Arg Asp Ile Lys Val Gln Phe Gln Ser Gly Gly
1               5                   10                  15
```

(2) INFORMATION FOR SEQ ID NO:41:

      (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 15 amino acids
         (B) TYPE: amino acid
         (C) STRANDEDNESS:
         (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: NO

      (v) FRAGMENT TYPE: internal

     (vi) ORIGINAL SOURCE:
         (A) ORGANISM: *Mycobacterium tuberculosis*
         (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

Asp Ile Lys Val Gln Phe Gln Ser Gly Gly Asn Asn Ser Pro Ala
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:42:

5   (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 15 amino acids
                (B) TYPE: amino acid
                (C) STRANDEDNESS:
                (D) TOPOLOGY: linear

10   (ii) MOLECULE TYPE: peptide

          (iii) HYPOTHETICAL: NO

           (iv) ANTI-SENSE: NO

            (v) FRAGMENT TYPE: internal

           (vi) ORIGINAL SOURCE:
15   (A) ORGANISM: *Mycobacterium tuberculosis*
                (B) STRAIN: Erdman

           (xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

Phe Gln Ser Gly Gly Asn Asn Ser Pro Ala Val Tyr Leu Leu Asp
1   5   10   15

20 (2) INFORMATION FOR SEQ ID NO:43:

            (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 15 amino acids
                (B) TYPE: amino acid
                (C) STRANDEDNESS:
25   (D) TOPOLOGY: linear

           (ii) MOLECULE TYPE: peptide

          (iii) HYPOTHETICAL: NO

           (iv) ANTI-SENSE: NO

            (v) FRAGMENT TYPE: internal

30   (vi) ORIGINAL SOURCE:
                (A) ORGANISM: *Mycobacterium tuberculosis*
                (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

Asn Asn Ser Pro Ala Val Tyr Leu Leu Asp Gly Leu Arg Ala Gln
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:44:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

Val Tyr Leu Leu Asp Gly Leu Arg Ala Gln Asp Asp Tyr Asn Gly
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:45:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

```
Gly Leu Arg Ala Gln Asp Asp Tyr Asn Gly Trp Asp Ile Asn Thr
1               5                   10                  15
```

(2) INFORMATION FOR SEQ ID NO:46:

     (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

     (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

```
Asp Asp Tyr Asn Gly Trp Asp Ile Asn Thr Pro Ala Phe Glu Trp
1               5                   10                  15
```

(2) INFORMATION FOR SEQ ID NO:47:

     (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

     (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

```
Trp Asp Ile Asn Thr Pro Ala Phe Glu Trp Tyr Tyr Gln Ser Gly
1               5                   10                      15
```

(2) INFORMATION FOR SEQ ID NO:48:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

```
Pro Ala Phe Glu Trp Tyr Tyr Gln Ser Gly Leu Ser Ile Val Met
1               5                   10                      15
```

(2) INFORMATION FOR SEQ ID NO:49:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:

```
Tyr Tyr Gln Ser Gly Leu Ser Ile Val Met Pro Val Gly Gly Gln
1               5                   10                      15
```

(2) INFORMATION FOR SEQ ID NO:50:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:50:

Leu Ser Ile Val Met Pro Val Gly Gly Gln Ser Ser Phe Tyr Ser
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:51:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:51:

Pro Val Gly Gly Gln Ser Ser Phe Tyr Ser Asp Trp Tyr Ser Pro
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:52:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
5   (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

10   (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:52:

15 Ser Ser Phe Tyr Ser Asp Trp Tyr Ser Pro Ala Cys Gly Lys Ala
    1   5   10   15

(2) INFORMATION FOR SEQ ID NO:53:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
20   (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

25   (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

30   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:53:

Asp Trp Tyr Ser Pro Ala Cys Gly Lys Ala Gly Cys Gln Thr Tyr
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:54:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:54:

Ala Cys Gly Lys Ala Gly Cys Gln Thr Tyr Lys Trp Glu Thr Phe
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:55:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:55:

Gly Cys Gln Thr Tyr Lys Trp Glu Thr Phe Leu Thr Ser Glu Leu
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:56:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:56:

Lys Trp Glu Thr Phe Leu Thr Ser Glu Leu Pro Gln Trp Leu Ser
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:57:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:57:

Leu Thr Ser Glu Leu Pro Gln Trp Leu Ser Ala Asn Arg Ala Val
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:58:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:58:

Pro Gln Trp Leu Ser Ala Asn Arg Ala Val Lys Pro Thr Gly Ser
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:59:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:59:

Ala Asn Arg Ala Val Lys Pro Thr Gly Ser Ala Ala Ile Gly Leu
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:60:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:60:

```
Lys Pro Thr Gly Ser Ala Ala Ile Gly Leu Ser Met Ala Gly Ser
1               5                   10                  15
```

(2) INFORMATION FOR SEQ ID NO:61:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:61:

```
Ala Ala Ile Gly Leu Ser Met Ala Gly Ser Ser Ala Met Ile Leu
1               5                   10                  15
```

(2) INFORMATION FOR SEQ ID NO:62:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:62:

Ser Met Ala Gly Ser Ser Ala Met Ile Leu Ala Ala Tyr His Pro
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:63:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:63:

Ser Ala Met Ile Leu Ala Ala Tyr His Pro Gln Gln Phe Ile Tyr
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:64:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:64:

Ala Ala Tyr His Pro Gln Gln Phe Ile Tyr Ala Gly Ser Leu Ser
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:65:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:65:

Gln Gln Phe Ile Tyr Ala Gly Ser Leu Ser Ala Leu Leu Asp Pro
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:66:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:66:

Ala Gly Ser Leu Ser Ala Leu Leu Asp Pro Ser Gln Gly Met Gly
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:67:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:67:

Ala Leu Leu Asp Pro Ser Gln Gly Met Gly Pro Ser Leu Ile Gly
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:68:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:68:

```
Ser Gln Gly Met Gly Pro Ser Leu Ile Gly Leu Ala Met Gly Asp
1               5                   10                  15
```

(2) INFORMATION FOR SEQ ID NO:69:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:69:

```
Pro Ser Leu Ile Gly Leu Ala Met Gly Asp Ala Gly Gly Tyr Lys
1               5                   10                  15
```

(2) INFORMATION FOR SEQ ID NO:70:

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 15 amino acids
       (B) TYPE: amino acid
5   (C) STRANDEDNESS:
       (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: NO

10   (v) FRAGMENT TYPE: internal

   (vi) ORIGINAL SOURCE:
       (A) ORGANISM: *Mycobacterium tuberculosis*
       (B) STRAIN: Erdman

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:70:

15 Leu Ala Met Gly Asp Ala Gly Gly Tyr Lys Ala Ala Asp Met Trp
   1   5   10   15

(2) INFORMATION FOR SEQ ID NO:71:

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 15 amino acids
20   (B) TYPE: amino acid
       (C) STRANDEDNESS:
       (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

25   (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

   (vi) ORIGINAL SOURCE:
       (A) ORGANISM: *Mycobacterium tuberculosis*
       (B) STRAIN: Erdman

30   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:71:

Ala Gly Gly Tyr Lys Ala Ala Asp Met Trp Gly Pro Ser Ser Asp
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:72:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:72:

Ala Ala Asp Met Trp Gly Pro Ser Ser Asp Pro Ala Trp Glu Arg
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:73:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:73:

Gly Pro Ser Ser Asp Pro Ala Trp Glu Arg Asn Asp Pro Thr Gln
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:74:

    (i) SEQUENCE CHARACTERISTICS:
      (A) LENGTH: 15 amino acids
      (B) TYPE: amino acid
      (C) STRANDEDNESS:
      (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

   (vi) ORIGINAL SOURCE:
      (A) ORGANISM: *Mycobacterium tuberculosis*
      (B) STRAIN: Erdman

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:74:

```
Pro Ala Trp Glu Arg Asn Asp Pro Thr Gln Gln Ile Pro Lys Leu
1               5                   10                  15
```

(2) INFORMATION FOR SEQ ID NO:75:

    (i) SEQUENCE CHARACTERISTICS:
      (A) LENGTH: 15 amino acids
      (B) TYPE: amino acid
      (C) STRANDEDNESS:
      (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

   (vi) ORIGINAL SOURCE:
      (A) ORGANISM: *Mycobacterium tuberculosis*
      (B) STRAIN: Erdman

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:75:

```
Asn Asp Pro Thr Gln Gln Ile Pro Lys Leu Val Ala Asn Asn Thr
1               5                   10                  15
```

(2) INFORMATION FOR SEQ ID NO:76:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
5   (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

10   (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:76:

15 Gln Ile Pro Lys Leu Val Ala Asn Asn Thr Arg Leu Trp Val Tyr
   1   5   10   15

(2) INFORMATION FOR SEQ ID NO:77:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
20   (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

25   (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

30   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:77:

Val Ala Asn Asn Thr Arg Leu Trp Val Tyr Cys Gly Asn Gly Thr
   1   5   10   15

(2) INFORMATION FOR SEQ ID NO:78:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:78:

Arg Leu Trp Val Tyr Cys Gly Asn Gly Thr Pro Asn Glu Leu Gly
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:79:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:79:

Cys Gly Asn Gly Thr Pro Asn Glu Leu Gly Gly Ala Asn Ile Pro
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:80:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:80:

```
Pro Asn Glu Leu Gly Gly Ala Asn Ile Pro Ala Glu Phe Leu Glu
1               5                   10                  15
```

(2) INFORMATION FOR SEQ ID NO:81:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:81:

```
Gly Ala Asn Ile Pro Ala Glu Phe Leu Glu Asn Phe Val Arg Ser
1               5                   10                  15
```

(2) INFORMATION FOR SEQ ID NO:82:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
5   (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: NO

10   (v) FRAGMENT TYPE: internal

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:82:

15 Ala Glu Phe Leu Glu Asn Phe Val Arg Ser Ser Asn Leu Lys Phe
   1   5   10   15

(2) INFORMATION FOR SEQ ID NO:83:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
20   (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

25   (iv) ANTI-SENSE: NO

   (v) FRAGMENT TYPE: internal

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

30   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:83:

Asn Phe Val Arg Ser Ser Asn Leu Lys Phe Gln Asp Ala Tyr Asn
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:84:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
5   (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

10   (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:84:

15 Ser Asn Leu Lys Phe Gln Asp Ala Tyr Asn Ala Ala Gly Gly His
   1   5   10   15

(2) INFORMATION FOR SEQ ID NO:85:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
20   (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

25   (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

30   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:85:

Gln Asp Ala Tyr Asn Ala Ala Gly Gly His Asn Ala Val Phe Asn
   1   5   10   15

(2) INFORMATION FOR SEQ ID NO:86:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:86:

```
Ala Ala Gly Gly His Asn Ala Val Phe Asn Phe Pro Pro Asn Gly
1               5                   10                  15
```

(2) INFORMATION FOR SEQ ID NO:87:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:87:

```
Asn Ala Val Phe Asn Phe Pro Pro Asn Gly Thr His Ser Trp Glu
1               5                   10                  15
```

(2) INFORMATION FOR SEQ ID NO:88:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:88:

Phe Pro Pro Asn Gly Thr His Ser Trp Glu Tyr Trp Gly Ala Gln
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:89:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:89:

Thr His Ser Trp Glu Tyr Trp Gly Ala Gln Leu Asn Ala Met Lys
1   5   10   15

(2) INFORMATION FOR SEQ ID NO:90:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:90:

```
Tyr Trp Gly Ala Gln Leu Asn Ala Met Lys Gly Asp Leu Gln Ser
1               5                   10                  15
```

(2) INFORMATION FOR SEQ ID NO:91:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: C-terminal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:91:

```
Leu Asn Ala Met Lys Gly Asp Leu Gln Ser Ser Leu Gly Ala Gly
1               5                   10                  15
```

(2) INFORMATION FOR SEQ ID NO:92:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 480 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: not relevant

    (ii) MOLECULE TYPE: DNA (genomic)

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:92:

```
ATGAAGCTCA CCACAATGAT CAAGACGGCA GTAGCGGTCG TGGCCATGGC      50
GGCCATCGCG ACCTTTGCGG CACCGGTCGC GTTGGCTGCC TATCCCATCA     100
CCGGAAAACT TGGCAGTGAG CTAACGATGA CCGACACCGT TGGCCAAGTC     150
GTGCTCGGCT GGAAGGTCAG TGATCTCAAA TCCAGCACGG CAGTCATCCC     200
CGGCTATCCG GTGGCCGGCC AGGTCTGGGA GGCCACTGCC ACGGTCAATG     250
CGATTCGCGG CAGCGTCACG CCCGCGGTCT CGCAGTTCAA TGCCCGCACC     300
GCCGACGGCA TCAACTACCG GGTGCTGTGG CAAGCCGCGG GCCCCGACAC     350
CATTAGCGGA GCCACTATCC CCCAAGGCGA ACAATCGACC GGCAAAATCT     400
ACTTCGATGT CACCGGCCCA TCGCCAACCA TCGTCGCGAT GAACAACGGC     450
ATGGAGGATC TGCTGATTTG GGAGCCGTAG      480
```

(2) INFORMATION FOR SEQ ID NO:93:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1437 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: not relevant

    (ii) MOLECULE TYPE: DNA (genomic)

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:93:

```
GTGACGGAAA AGACGCCCGA CGACGTCTTC AAACTTGCCA AGGACGAGAA      50
GGTCGAATAT GTCGACGTCC GGTTCTGTGA CCTGCCTGGC ATCATGCAGC     100
ACTTCACGAT TCCGGCTTCG GCCTTTGACA AGAGCGTGTT TGACGACGGC     150
TTGGCCTTTG ACGGCTCGTC GATTCGCGGG TTCCAGTCGA TCCACGAATC     200
CGACATGTTG CTTCTTCCCG ATCCCGAGAC GGCGCGCATC GACCCGTTCC     250
```

GCGCGGCCAA GACGCTGAAT ATCAACTTCT TTGTGCACGA CCCGTTCACC   300

CTGGAGCCGT ACTCCCGCGA CCCGCGCACC ATCGCCCGCA AGGCCGAGAA   350

CTACCTGATC AGCACTGGCA TCGCCGACAC CGCATACTTC GGCGCCGAGG   400

CCGAGTTCTA CATTTTCGAT TCGGTGAGCT TCGACTCGCG CGCCAACGGC   450

5   TCCTTCTACG AGGTGGACGC CATCTCGGGG TGGTGGAACA CCGGCGCGGC   500

DACCGAGGCC GACGGCAGTC CCAACCGGGG CTACAAGGTC CGCCACAAGG   550

GCGGGTATTT CCCAGTGGCC CCCAACGACC AATACGTCGA CCTGCGCGAC   600

AAGATGCTGA CCAACCTGAT CAACTCCGGC TTCATCCTGG AGAAGGGCCA   650

CCACGAGGTG GGCAGCGGCG GACAGGCCGA GATCAACTAC CAGTTCAATT   700

10   CGCTGCTGCA CGCCGCCGAC GACATGCAGT TGTACAAGTA CATCATCAAG   750

AACACCGCCT GGCAGAACGG CAAAACGGTC ACGTTCATGC CCAAGCCGCT   800

GTTCGGCGAC AACGGGTCCG GCATGCACTG TCATCAGTCG CTGTGGAAGG   850

ACGGGGCCCC GCTGATGTAC GACGAGACGG GTTATGCCGG TCTGTCGGAC   900

ACGGCCCGTC ATTACATCGG CGGCCTGTTA CACCACGCGC CGTCGCTGCT   950

15   GGCCTTCACC AACCCGACGG TGAACTCCTA CAAGCGGCTG GTTCCCGGTT   1000

ACGAGGCCCC GATCAACCTG GTCTATAGCC AGCGCAACCG GTCGGCATGC   1050

GTGCGCATCC CGATCACCGG CAGCAACCCG AAGGCCAAGC GGCTGGAGTT   1100

CCGAAGCCCC GACTCGTCGG GCAACCCGTA TCTGGCGTTC TCGGCCATGC   1150

TGATGGCAGG CCTGGACGGT ATCAAGAACA AGATCGAGCC GCAGGCGCCC   1200

20   GTCGACAAGG ATCTCTACGA GCTGCCGCCG GAAGAGGCCG CGAGTATCCC   1250

GCAGACTCCG ACCCAGCTGT CAGATGTGAT CGACCGTCTC GAGGCCGACC   1300

ACGAATACCT CACCGAAGGA GGGGTGTTCA CAAACGACCT GATCGAGACG   1350

TGGATCAGTT TCAAGCGCGA AAACGAGATC GAGCCGGTCA ACATCCGGCC   1400

GCATCCCTAC GAATTCGCGC TGTACTACGA CGTTTAA   1437

(2) INFORMATION FOR SEQ ID NO:94:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 687 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: not relevant

    (ii) MOLECULE TYPE: DNA (genomic)

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:94:

```
GTGCGCATCA AGATCTTCAT GCTGGTCACG GCTGTCGTTT TGCTCTGTTG        50
TTCGGGTGTG GCCACGGCCG CGCCCAAGAC CTACTGCGAG GAGTTGAAAG       100
GCACCGATAC CGGCCAGGCG TGCCAGATTC AAATGTCCGA CCCGGCCTAC       150
AACATCAACA TCAGCCTGCC CAGTTACTAC CCCGACCAGA AGTCGCTGGA       200
AAATTACATC GCCCAGACGC GCGACAAGTT CCTCAGCGCG GCCACATCGT       250
CCACTCCACG CGAAGCCCCC TACGAATTGA ATATCACCTC GGCCACATAC       300
CAGTCCGCGA TACCGCCGCG TGGTACGCAG GCCGTGGTGC TCAAGGTCTA       350
CCAGAACGCC GGCGGCACGC ACCCAACGAC CACGTACAAG GCCTTCGATT       400
GGGACCAGGC CTATCGCAAG CCAATCACCT ATGACACGCT GTGGCAGGCT       450
GACACCGATC CGCTGCCAGT CGTCTTCCCC ATTGTGCAAG GTGAACTGAG       500
CAAGCAGACC GGACAACAGG TATCGATAGC GCCGAATGCC GGCTTGGACC       550
CGGTGAATTA TCAGAACTTC GCAGTCACGA ACGACGGGGT GATTTTCTTC       600
TTCAACCCGG GGGAGTTGCT GCCCGAAGCA GCCGGCCCAA CCCAGGTATT       650
GGTCCCACGT TCCGCGATCG ACTCGATGCT GGCCTAG        687
```

(2) INFORMATION FOR SEQ ID NO:95:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 900 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: not relevant

    (ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:95:

```
    ATGAAGGGTC GGTCGGCGCT GCTGCGGGCG CTCTGGATTG CCGCACTGTC    50

    ATTCGGGTTG GGCGGTGTCG CGGTAGCCGC GGAACCCACC GCCAAGGCCG   100

    CCCCATACGA GAACCTGATG GTGCCGTCGC CCTCGATGGG CCGGGACATC   150

5   CCGGTGGCCT TCCTAGCCGG TGGGCCGCAC GCGGTGTATC TGCTGGACGC   200

    CTTCAACGCC GGCCCGGATG TCAGTAACTG GGTCACCGCG GGTAACGCGA   250

    TGAACACGTT GGCGGGCAAG GGGATTTCGG TGGTGGCACC GGCCGGTGGT   300

    GCGTACAGCA TGTACACCAA CTGGGAGCAG GATGGCAGCA AGCAGTGGGA   350

    CACCTTCTTG TCCGCTGAGC TGCCCGACTG GCTGGCCGCT AACCGGGGCT   400

10  TGGCCCCCGG TGGCCATGCG GCCGTTGGCG CCGCTCAGGG CGGTTACGGG   450

    GCGATGGCGC TGGCGGCCTT CCACCCCGAC CGCTTCGGCT TCGCTGGCTC   500

    GATGTCGGGC TTTTTGTACC CGTCGAACAC CACCACCAAC GGTGCGATCG   550

    CGGCGGGCAT GCAGCAATTC GGCGGTGTGG ACACCAACGG AATGTGGGGA   600

    GCACCACAGC TGGGTCGGTG GAAGTGGCAC GACCCGTGGG TGCATGCCAG   650

15  CCTGCTGGCG CAAAACAACA CCCGGGTGTG GGTGTGGAGC CCGACCAACC   700

    CGGGAGCCAG CGATCCCGCC GCCATGATCG GCCAAGCCGC CGAGGCGATG   750

    GGTAACAGCC GCATGTTCTA CAACCAGTAT CGCAGCGTCG GCGGGCACAA   800

    CGGACACTTC GACTTCCCAG CCAGCGGTGA CAACGGCTGG GGCTCGTGGG   850

    CGCCCCAGCT GGGCGCTATG TCGGGCGATA TCGTCGGTGC GATCCGCTAA   900
```

(2) INFORMATION FOR SEQ ID NO:96:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 15 amino acids
            (B) TYPE: amino acid
            (C) STRANDEDNESS:
            (D) TOPOLOGY: linear

       (ii) MOLECULE TYPE: peptide

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: NO

       (v) FRAGMENT TYPE: N-terminal

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: *Mycobacterium tuberculosis*
         (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:96:

         F S R P G L P V E Y L Q V P S

(2) INFORMATION FOR SEQ ID NO:97:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: Internal

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: *Mycobacterium tuberculosis*
         (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:97:

         L P V E Y L Q V P S P S M G R

(2) INFORMATION FOR SEQ ID NO:98:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: Internal

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: *Mycobacterium tuberculosis*
         (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:98:

    L Q V P S P S M G R D I K V Q

(2) INFORMATION FOR SEQ ID NO:99:

  (i) SEQUENCE CHARACTERISTICS:
     (A) LENGTH: 15 amino acids
     (B) TYPE: amino acid
     (C) STRANDEDNESS:
     (D) TOPOLOGY: linear

  (ii) MOLECULE TYPE: peptide

 (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: NO

  (v) FRAGMENT TYPE: Internal

  (vi) ORIGINAL SOURCE:
     (A) ORGANISM: *Mycobacterium tuberculosis*
     (B) STRAIN: Erdman

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:99:

    P S M G R D I K V Q F Q S G G

(2) INFORMATION FOR SEQ ID NO:100:

  (i) SEQUENCE CHARACTERISTICS:
     (A) LENGTH: 15 amino acids
     (B) TYPE: amino acid
     (C) STRANDEDNESS:
     (D) TOPOLOGY: linear

  (ii) MOLECULE TYPE: peptide

 (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: NO

  (v) FRAGMENT TYPE: Internal

  (vi) ORIGINAL SOURCE:
     (A) ORGANISM: *Mycobacterium tuberculosis*
     (B) STRAIN: Erdman

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:100:

    D I K V Q F Q S G G A N S P

(2) INFORMATION FOR SEQ ID NO:101:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: Internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:101:

        F Q S G G A N S P A L Y L L D

(2) INFORMATION FOR SEQ ID NO:102:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: Internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:102:

        A N S P A L Y L L D G L R A Q

(2) INFORMATION FOR SEQ ID NO:103:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids

        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

     (v) FRAGMENT TYPE: Internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:103:

        L Y L L D G L R A Q D D F S G

(2) INFORMATION FOR SEQ ID NO:104:

     (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

     (v) FRAGMENT TYPE: Internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:104:

        G L R A Q D D F S G W D I N T

(2) INFORMATION FOR SEQ ID NO:105:

     (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

```
 (ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: NO

 (iv) ANTI-SENSE: NO

  (v) FRAGMENT TYPE: Internal

 (vi) ORIGINAL SOURCE:
      (A) ORGANISM: Mycobacterium tuberculosis
      (B) STRAIN: Erdman

 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:105:

      D D F S G W D I N T P A F E W
```

(2) INFORMATION FOR SEQ ID NO:106:

```
  (i) SEQUENCE CHARACTERISTICS:
      (A) LENGTH: 15 amino acids
      (B) TYPE: amino acid
      (C) STRANDEDNESS:
      (D) TOPOLOGY: linear

 (ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: NO

 (iv) ANTI-SENSE: NO

  (v) FRAGMENT TYPE: Internal

 (vi) ORIGINAL SOURCE:
      (A) ORGANISM: Mycobacterium tuberculosis
      (B) STRAIN: Erdman

 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:106:

      W D I N T P A F E W Y D Q S G
```

(2) INFORMATION FOR SEQ ID NO:107:

```
  (i) SEQUENCE CHARACTERISTICS:
      (A) LENGTH: 15 amino acids
      (B) TYPE: amino acid
      (C) STRANDEDNESS:
      (D) TOPOLOGY: linear

 (ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: NO
```

    (iv) ANTI-SENSE: NO

     (v) FRAGMENT TYPE: Internal

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: *Mycobacterium tuberculosis*
         (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:107:

         P A F E W Y D Q S G L S V V M

(2) INFORMATION FOR SEQ ID NO:108:

     (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 15 amino acids
         (B) TYPE: amino acid
         (C) STRANDEDNESS:
         (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

     (v) FRAGMENT TYPE: Internal

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: *Mycobacterium tuberculosis*
         (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:108:

         Y D Q S G L S V V M P V G G Q

(2) INFORMATION FOR SEQ ID NO:109:

     (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 15 amino acids
         (B) TYPE: amino acid
         (C) STRANDEDNESS:
         (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

     (v) FRAGMENT TYPE: Internal

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: *Mycobacterium tuberculosis*
    (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:109:

    L S V V M P V G G Q S S F Y S

(2) INFORMATION FOR SEQ ID NO:110:

  (i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 15 amino acids
    (B) TYPE: amino acid
    (C) STRANDEDNESS:
    (D) TOPOLOGY: linear

 (ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: NO

 (iv) ANTI-SENSE: NO

  (v) FRAGMENT TYPE: Internal

 (vi) ORIGINAL SOURCE:
    (A) ORGANISM: *Mycobacterium tuberculosis*
    (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:110:

    P V G G Q S S F Y S D W Y Q P

(2) INFORMATION FOR SEQ ID NO:111:

  (i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 15 amino acids
    (B) TYPE: amino acid
    (C) STRANDEDNESS:
    (D) TOPOLOGY: linear

 (ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: NO

 (iv) ANTI-SENSE: NO

  (v) FRAGMENT TYPE: Internal

 (vi) ORIGINAL SOURCE:
    (A) ORGANISM: *Mycobacterium tuberculosis*
    (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:111:

    S S F Y S D W Y Q P A C G K A

(2) INFORMATION FOR SEQ ID NO:112:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

 (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: NO

   (v) FRAGMENT TYPE: Internal

  (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:112:

    D W Y Q P A C G K A G C Q T Y

(2) INFORMATION FOR SEQ ID NO:113:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

 (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: NO

   (v) FRAGMENT TYPE: Internal

  (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:113:

    A C G K A G C Q T Y K W E T F

(2) INFORMATION FOR SEQ ID NO:114:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

 (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: NO

   (v) FRAGMENT TYPE: Internal

  (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:114:

       G C Q T Y K W E T F L T S E LK Y K W E T F

(2) INFORMATION FOR SEQ ID NO:115:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

 (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: NO

   (v) FRAGMENT TYPE: Internal

  (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:115:
      K W E T F L T S E L P G W L Q

(2) INFORMATION FOR SEQ ID NO:116:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid

```
        (C)  STRANDEDNESS:
        (D)  TOPOLOGY: linear

   (ii)  MOLECULE TYPE: peptide

  (iii)  HYPOTHETICAL: NO

   (iv)  ANTI-SENSE: NO

    (v)  FRAGMENT TYPE: Internal

   (vi)  ORIGINAL SOURCE:
        (A)  ORGANISM: Mycobacterium tuberculosis
        (B)  STRAIN: Erdman

   (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:116:

        L T S E L P G W L Q A N R H V
```

(2) INFORMATION FOR SEQ ID NO:117:

```
    (i)  SEQUENCE CHARACTERISTICS:
        (A)  LENGTH: 15 amino acids
        (B)  TYPE: amino acid
        (C)  STRANDEDNESS:
        (D)  TOPOLOGY: linear

   (ii)  MOLECULE TYPE: peptide

  (iii)  HYPOTHETICAL: NO

   (iv)  ANTI-SENSE: NO

    (v)  FRAGMENT TYPE: Internal

   (vi)  ORIGINAL SOURCE:
        (A)  ORGANISM: Mycobacterium tuberculosis
        (B)  STRAIN: Erdman

   (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:117:

        P G W L Q A N R H V K P T G S
```

(2) INFORMATION FOR SEQ ID NO:118:

```
    (i)  SEQUENCE CHARACTERISTICS:
        (A)  LENGTH: 15 amino acids
        (B)  TYPE: amino acid
        (C)  STRANDEDNESS:
        (D)  TOPOLOGY: linear

   (ii)  MOLECULE TYPE: peptide
```

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: Internal

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: *Mycobacterium tuberculosis*
    (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:118:

    A N R H V K P T G S A V V G LK

(2) INFORMATION FOR SEQ ID NO:119:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: Internal

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: *Mycobacterium tuberculosis*
    (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:119:

    A P T G S A V V G L S M A A S

(2) INFORMATION FOR SEQ ID NO:120:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: Internal

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: *Mycobacterium tuberculosis*
    (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:120:

    A V V G L S M A A S S A L T L

(2) INFORMATION FOR SEQ ID NO:121:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: Internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:121:

    S M A A S S A L T L A I Y H P

(2) INFORMATION FOR SEQ ID NO:122:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: Internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*

(B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:122:

S A L T L A I Y H P Q Q F V Y

(2) INFORMATION FOR SEQ ID NO:123:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: Internal

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:123:

A I Y H P Q Q F V Y A G A M S

(2) INFORMATION FOR SEQ ID NO:124:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: Internal

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:124:

Q Q F V Y A G A M S G L L D P

(2) INFORMATION FOR SEQ ID NO:125:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: Internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:125:

     A G A M S G L L D P S Q A M G

(2) INFORMATION FOR SEQ ID NO:126:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: Internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:126:

     G L L D P S Q A M G P T L I G

(2) INFORMATION FOR SEQ ID NO:127:

       (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 15 amino acids
           (B) TYPE: amino acid
           (C) STRANDEDNESS:
           (D) TOPOLOGY: linear

      (ii) MOLECULE TYPE: peptide

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: NO

       (v) FRAGMENT TYPE: Internal

      (vi) ORIGINAL SOURCE:
           (A) ORGANISM: *Mycobacterium tuberculosis*
           (B) STRAIN: Erdman

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:127:

           S Q A M G P T L I G L A M G DP

(2) INFORMATION FOR SEQ ID NO:128:

       (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 15 amino acids
           (B) TYPE: amino acid
           (C) STRANDEDNESS:
           (D) TOPOLOGY: linear

      (ii) MOLECULE TYPE: peptide

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: NO

       (v) FRAGMENT TYPE: Internal

      (vi) ORIGINAL SOURCE:
           (A) ORGANISM: *Mycobacterium tuberculosis*
           (B) STRAIN: Erdman

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:128:

           S T L I G L A M G D A G G Y K

(2) INFORMATION FOR SEQ ID NO:129:

       (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 15 amino acids
           (B) TYPE: amino acid
           (C) STRANDEDNESS:

        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

     (v) FRAGMENT TYPE: Internal

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: *Mycobacterium tuberculosis*
         (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:129:

         L A M G D A G G Y K A S D M W

(2) INFORMATION FOR SEQ ID NO:130:

     (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 15 amino acids
         (B) TYPE: amino acid
         (C) STRANDEDNESS:
         (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

     (v) FRAGMENT TYPE: Internal

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: *Mycobacterium tuberculosis*
         (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:130:

         A G G Y K A S D M W G P K E D

(2) INFORMATION FOR SEQ ID NO:131:

     (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 15 amino acids
         (B) TYPE: amino acid
         (C) STRANDEDNESS:
         (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: Internal

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: *Mycobacterium tuberculosis*
    (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:131:

    A S D M W G P K E D P A W Q R

(2) INFORMATION FOR SEQ ID NO:132:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: Internal

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: *Mycobacterium tuberculosis*
    (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:132:

    G P K E D P A W Q R N D P L L

(2) INFORMATION FOR SEQ ID NO:133:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

```
        (v)  FRAGMENT TYPE: Internal

       (vi)  ORIGINAL SOURCE:
             (A)  ORGANISM: Mycobacterium tuberculosis
             (B)  STRAIN: Erdman

       (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:133:

             P A W Q R N D P L L N V G K L


(2)  INFORMATION FOR SEQ ID NO:134:

        (i)  SEQUENCE CHARACTERISTICS:
             (A)  LENGTH: 15 amino acids
             (B)  TYPE: amino acid
             (C)  STRANDEDNESS:
             (D)  TOPOLOGY: linear

       (ii)  MOLECULE TYPE: peptide

      (iii)  HYPOTHETICAL: NO

       (iv)  ANTI-SENSE: NO

        (v)  FRAGMENT TYPE: Internal

       (vi)  ORIGINAL SOURCE:
             (A)  ORGANISM: Mycobacterium tuberculosis
             (B)  STRAIN: Erdman

       (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:134:

             N D P L L N V G K L I A N N T


(2)  INFORMATION FOR SEQ ID NO:135:

        (i)  SEQUENCE CHARACTERISTICS:
             (A)  LENGTH: 15 amino acids
             (B)  TYPE: amino acid
             (C)  STRANDEDNESS:
             (D)  TOPOLOGY: linear

       (ii)  MOLECULE TYPE: peptide

      (iii)  HYPOTHETICAL: NO

       (iv)  ANTI-SENSE: NO

        (v)  FRAGMENT TYPE: Internal

       (vi)  ORIGINAL SOURCE:
             (A)  ORGANISM: Mycobacterium tuberculosis
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       (B) STRAIN: Erdman

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:135:

          N V G K L I A N N T R V W V Y

(2) INFORMATION FOR SEQ ID NO:136:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: Internal

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:136:

          I A N N T R V W V Y C G N G K

(2) INFORMATION FOR SEQ ID NO:137:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: Internal

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:137:

    R V W V Y C G N G K P S D L G

(2) INFORMATION FOR SEQ ID NO:138:

  (i) SEQUENCE CHARACTERISTICS:
      (A) LENGTH: 15 amino acids
      (B) TYPE: amino acid
      (C) STRANDEDNESS:
      (D) TOPOLOGY: linear

  (ii) MOLECULE TYPE: peptide

 (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: NO

  (v) FRAGMENT TYPE: Internal

  (vi) ORIGINAL SOURCE:
      (A) ORGANISM: *Mycobacterium tuberculosis*
      (B) STRAIN: Erdman

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:138:

    C G N G K P S D L G G N N L P

(2) INFORMATION FOR SEQ ID NO:139:

  (i) SEQUENCE CHARACTERISTICS:
      (A) LENGTH: 15 amino acids
      (B) TYPE: amino acid
      (C) STRANDEDNESS:
      (D) TOPOLOGY: linear

  (ii) MOLECULE TYPE: peptide

 (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: NO

  (v) FRAGMENT TYPE: Internal

  (vi) ORIGINAL SOURCE:
      (A) ORGANISM: *Mycobacterium tuberculosis*
      (B) STRAIN: Erdman

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:139:

    P S D L G G N N L P A K F L E

(2) INFORMATION FOR SEQ ID NO:140:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: Internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:140:

        G N N L P A K F L E G F V R TA

(2) INFORMATION FOR SEQ ID NO:141:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: Internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:141:

        G K F L E G F V R T S N I K F

(2) INFORMATION FOR SEQ ID NO:142:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids

           (B) TYPE: amino acid
           (C) STRANDEDNESS:
           (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: NO

      (v) FRAGMENT TYPE: Internal

     (vi) ORIGINAL SOURCE:
           (A) ORGANISM: *Mycobacterium tuberculosis*
           (B) STRAIN: Erdman

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:142:

           G F V R T S N I K F Q D A Y N

 (2) INFORMATION FOR SEQ ID NO:143:

      (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 15 amino acids
           (B) TYPE: amino acid
           (C) STRANDEDNESS:
           (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: NO

      (v) FRAGMENT TYPE: Internal

     (vi) ORIGINAL SOURCE:
           (A) ORGANISM: *Mycobacterium tuberculosis*
           (B) STRAIN: Erdman

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:143:

           S N I K F Q D A Y N A G G G H

 (2) INFORMATION FOR SEQ ID NO:144:

      (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 15 amino acids
           (B) TYPE: amino acid
           (C) STRANDEDNESS:
           (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: Internal

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: *Mycobacterium tuberculosis*
    (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:144:

    Q D A Y N A G G G H N G V F D

(2) INFORMATION FOR SEQ ID NO:145:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: Internal

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: *Mycobacterium tuberculosis*
    (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:145:

    A G G G H N G V F D F P D S G

(2) INFORMATION FOR SEQ ID NO:146:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: Internal

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: *Mycobacterium tuberculosis*
    (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:146:

    N G V F D F P D S G T H S W E

(2) INFORMATION FOR SEQ ID NO:147:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: Internal

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: *Mycobacterium tuberculosis*
    (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:147:

    F P D S G T H S W E Y W G A Q

(2) INFORMATION FOR SEQ ID NO:148:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: Internal

        (vi) ORIGINAL SOURCE:
              (A) ORGANISM: *Mycobacterium tuberculosis*
              (B) STRAIN: Erdman

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:148:

              T H S W E Y W G A Q L N A M K

(2) INFORMATION FOR SEQ ID NO:149:

        (i) SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 15 amino acids
              (B) TYPE: amino acid
              (C) STRANDEDNESS:
              (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: peptide

       (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: NO

         (v) FRAGMENT TYPE: Internal

        (vi) ORIGINAL SOURCE:
              (A) ORGANISM: *Mycobacterium tuberculosis*
              (B) STRAIN: Erdman

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:149:

              Y W G A Q L N A M K P D L Q R

(2) INFORMATION FOR SEQ ID NO:150:

        (i) SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 15 amino acids
              (B) TYPE: amino acid
              (C) STRANDEDNESS:
              (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: peptide

       (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: NO

         (v) FRAGMENT TYPE: Internal

        (vi) ORIGINAL SOURCE:
              (A) ORGANISM: *Mycobacterium tuberculosis*
              (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:150:

    L N A M K P D L Q R A L G A T

(2) INFORMATION FOR SEQ ID NO:151:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: Internal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:151:

    P D L Q R A L G A T P N T G P

(2) INFORMATION FOR SEQ ID NO:152:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: C-Terminal

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: *Mycobacterium tuberculosis*
        (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:152:

    A L G A T P N T G P A P Q G A

(2) INFORMATION FOR SEQ ID NO:153:

   (i) SEQUENCE CHARACTERISTICS:
     (A) LENGTH: 18 amino acids
     (B) TYPE: amino acid
     (C) STRANDEDNESS:
     (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: N-Terminal

   (vi) ORIGINAL SOURCE:
     (A) ORGANISM: *Mycobacterium tuberculosis*
     (B) STRAIN: Erdman

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:153:

     F S R P G L P V E Y L Q V P S P S M

(2) INFORMATION FOR SEQ ID NO:154:

   (i) SEQUENCE CHARACTERISTICS:
     (A) LENGTH: 16 amino acids
     (B) TYPE: amino acid
     (C) STRANDEDNESS:
     (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: Internal

   (vi) ORIGINAL SOURCE:
     (A) ORGANISM: *Mycobacterium tuberculosis*
     (B) STRAIN: Erdman

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:154:

     D I K V Q F Q S G G A N S P A L

(2) INFORMATION FOR SEQ ID NO:155:

   (i) SEQUENCE CHARACTERISTICS:
     (A) LENGTH: 17 amino acids

            (B) TYPE: amino acid
            (C) STRANDEDNESS:
            (D) TOPOLOGY: linear

       (ii) MOLECULE TYPE: peptide

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: NO

        (v) FRAGMENT TYPE: Internal

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: *Mycobacterium tuberculosis*
            (B) STRAIN: Erdman

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:155:

             P V G G Q S S F Y S D W Y Q P A C

(2) INFORMATION FOR SEQ ID NO:156:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 17 amino acids
            (B) TYPE: amino acid
            (C) STRANDEDNESS:
            (D) TOPOLOGY: linear

       (ii) MOLECULE TYPE: peptide

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: NO

        (v) FRAGMENT TYPE: Internal

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: *Mycobacterium tuberculosis*
            (B) STRAIN: Erdman

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:156:

             S M A A S S A L T L A I Y H P Q Q

(2) INFORMATION FOR SEQ ID NO:157:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 18 amino acids
            (B) TYPE: amino acid
            (C) STRANDEDNESS:
            (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: Internal

(vi) ORIGINAL SOURCE:
 (A) ORGANISM: *Mycobacterium tuberculosis*
 (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:157:

P Q Q F V Y A G A M S G L L D P S Q

(2) INFORMATION FOR SEQ ID NO:158:

 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 18 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS:
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: Internal

(vi) ORIGINAL SOURCE:
 (A) ORGANISM: *Mycobacterium tuberculosis*
 (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:158:

C G N G K P S D L G G N N L P A K

(2) INFORMATION FOR SEQ ID NO:159:

 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 16 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS:
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: Internal

(vi) ORIGINAL SOURCE:
     (A) ORGANISM: *Mycobacterium tuberculosis*
     (B) STRAIN: Erdman

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:159:

       F Q D A Y N A G G G H N G V F D

(2) INFORMATION FOR SEQ ID NO:160:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 14 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS:
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: NO

    (v) FRAGMENT TYPE: Internal

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: *Mycobacterium tuberculosis*
         (B) STRAIN: Erdman

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:160:

         P D L Q R A L G A T P N T G